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ON THE GENUS SIERROBIUS STRANEO, 1951 (COLEOPTERA: CARABIDAE: PTEROSTICHINI)

STEFANO L. STRANEO¹

ABSTRACT

The genus Sierrobius Straneo, 1951, and its subgenus Pachyabaris Straneo, 1951, are peculiar to the Sierra Nevada de Santa Marta, Colombia. Three of the species attributed in the original description to Pachyabaris (laevis Straneo, 1951, minuta Straneo, 1951, and striolata Straneo, 1951) are better placed in Sierrobius (Sierrobius) (new combinations). Four new species of subgenus Sierrobius are described here: kochalkai, davidsoni, aberrans, and angularis. Of these species, angularis and aberrans have a shape rather different from the other species of subgenus Sierrobius and probably require a new subgenus.

INTRODUCTION

I described the genus Sierrobius in 1951 for five new species from Colombia, Sierra Nevada de Santa Marta, sent to me for determination by my friend Dr. P. J. Darlington, Jr., of the Museum of Comparative Zoology, Harvard University, where the holotypes are deposited. Each of these species (with a single exception) was represented by a single specimen. In the same paper, I described also the new genus Pachyabaris, with five new species also from Sierra Nevada de Santa Marta—four of these species represented by one to four specimens, the fifth by

¹ Address: Viale Romagna 10, 20133 Milano, Italy. Submitted 13 September 1984.

10 specimens. I later (Straneo, 1977, 1979) became convinced that *Pachyabaris* was no more than a subgenus of *Sierrobius*. *Sierrobius* and *Pachyabaris* are, as far as I know, peculiar to the Sierra Nevada de Santa Marta. I have not yet seen any other species from other localities assignable to these two subgenera.

Some months ago, Robert L. Davidson of the Carnegie Museum of Natural History sent to me for determination a collection of 23 specimens belonging to the genus *Sierrobius*, which were collected in the Sierra Nevada de Santa Marta by his friend, John A. Kochalka. Among these specimens I found five of the previously described species and four new very well defined species. The study of this important material convinced me that only the species *darlingtoni* and *subcordatus* should be separated from the true *Sierrobius* by the wholly different general shape and remain in the subgenus *Pachyabaris*. The three other species formerly placed there (*laevis*, *minuta*, and *striolata*) are better placed in *Sierrobius* (*Sierrobius*) (NEW COMBINATIONS).

CHECKLIST OF THE SPECIES OF SIERROBIUS

Sierrobius (Sierrobius) laevis (Straneo, 1951), new combination

Sierrobius (Sierrobius) minutus (Straneo, 1951), new combination

Sierrobius (Sierrobius) striolatus (Straneo, 1951), new combination

Sierrobius (Sierrobius) kochalkai, new species

Sierrobius (Sierrobius) davidsoni, new species

Sierrobius (Sierrobius) aberrans, new species

Sierrobius (Sierrobius) angularis, new species

Sierrobius (Sierrobius) smaragdinus Straneo, 1951

Sierrobius (Sierrobius) laevigatus Straneo, 1951

Sierrobius (Sierrobius) bistriatus Straneo, 1951

Sierrobius (Sierrobius) uniformis Straneo, 1951

Sierrobius (Sierrobius) parvulus Straneo, 1951

Sierrobius (Pachyabaris) darlingtoni (Straneo, 1951), new combination

Sierrobius (Pachyabaris) subcordatus (Straneo, 1951), new combination

Genus Sierrobius Straneo, 1951

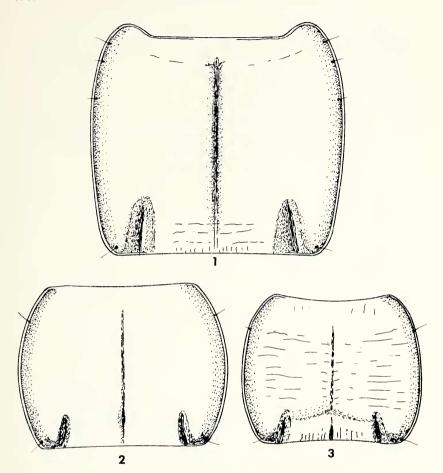
Subgenus Sierrobius Straneo, 1951

Type species.—Sierrobius smaragdinus Straneo, 1951, by original designation.

Subgenus Pachyabaris Straneo, 1951, new status

Type species.—Pachyabaris darlingtoni Straneo, 1951, fixed here.

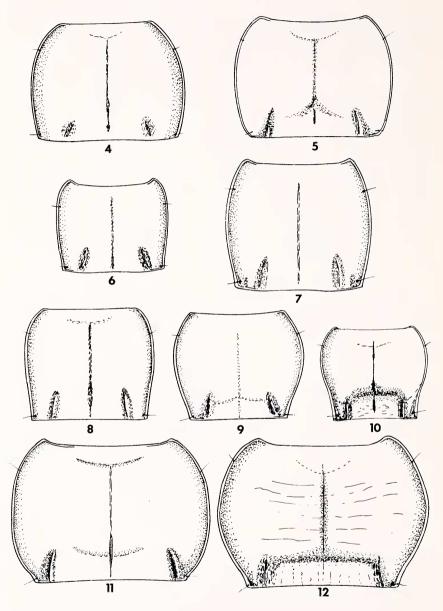
This genus belongs to the tribe Pterostichini. The chief characters of the genus are: paraglossae without setae at their extremities; antennae average, elongate, antennomeres 4–10 distinctly longer than wide; elytra normally striate, intervals smooth, regular; crossing of epipleura



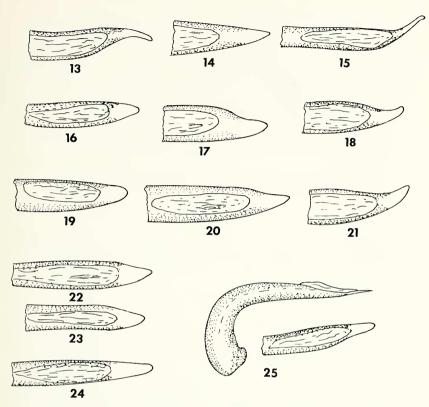
Figs. 1-3.—Sketches of the shape of pronotum of some species of Sierrobius. 1. S. smaragdinus; 2. S. bistriatus; 3. S. kochalkai.

well developed; third interval with 3 punctures; sterna IV-VI entirely transversely sulcate (or nearly so) and margined basally, transverse sulcus with large and deep punctures.

Owing to the kindness of the authorities of the Museum of Comparative Zoology, I was able to see again the types of the previously described species not represented in my collection by paratypes, so that I am able to present a key to the species of the genus *Sierrobius*.



Figs. 4-12.—Sketches of the shape of pronotum of some species of Sierrobius. 4. S. laevis; 5. S. davidsoni; 6. S. minutus; 7. S. striolatus; 8. S. parvulus; 9. S. aberrans; 10. S. angularis; 11. S. (Pachyabaris) darlingtoni; 12. S. (Pachyabaris) subcordatus.



Figs. 13–25.—Sketches of the shape of apical blade of aedeagus (dorsal view) of some Sierrobius. 13. S. smaragdinus; 14. S. laevigatus; 15. S. bistriatus; 16. S. kochalkai; 17. S. laevis; 18. S. davidsoni; 19. S. minutus; 20. S. striolatus; 21. S. parvulus; 22. S. aberrans; 23. S. angularis; 24. S. (Pachyabaris) darlingtoni. 25. Sketch of the shape of aedeagus of Sierrobius (Pachyabaris) subcordatus, lateral view and dorsal view.

KEY TO THE ADULTS OF THE SPECIES OF THE GENUS SIERROBIUS

1 (0)		
1(0).	Pronotum subrectangular or subtrapezoidal (Figs. 1–10), sides little rounded;	
	base little narrower than greatest width (if sides sinuate before base and base	
	narrower, then size smaller, length 7-8 mm). Sierrobius (sensu stricto)	2
1'.	Pronotum with sides strongly rounded (Figs. 11–12); base much narrower	
	than greatest width; part of pronotum between basal impressions moderately	
	or rather strongly depressed; length 9-11 mm. Sierrobius (Pachyabaris)	13
2(1).	Size greater than 10 mm; base of pronotum between basal impressions con-	
, ,	tinuing the convexity of the disc	3
2'.	Size smaller, generally less than 8 mm; base of pronotum between basal	
	impressions either continuing the convexity of the disc or flat	7

3(2).	Anterior half of lateral border of pronotum with 2–3 setigerous pores; color of upper surface bright metallic green, shiny (Fig. 1); apical blade of aedeagus as in Fig. 13
3'.	Anterior half of lateral border of pronotum with only the usual single setigerous pore
` ´	Elytral striae more or less faint, except seventh, which is always rather deeply impressed; upper surface always with strong metallic reflections
	All elytral striae uniformly and rather deeply impressed; upper surface without or with faint metallic reflections
5(4).	Length 16 mm; elytra entirely smooth; upper surface violaceous red with some greenish reflections; apical blade of aedeagus nearly symmetrical (Fig.
	14)
	Length 14 mm; scutellary stria without basal pore; color brown
6′.	Length 11 mm; scutellary stria with basal pore; color blackish, lateral border of elytra and pronotum reddish; first puncture of third interval adjoining third stria; pronotum as in Fig. 3; apical blade of aedeagus as in Fig. 16
7(2').	Sides of pronotum moderately but evidently rounded for the entire length (Figs. 4 and 5)
7′.	Sides of pronotum very little rounded in the anterior half and nearly straight or subsinuate toward base (Figs. 6-10) 9
8(7).	Color bright bronze; basal angles of pronotum not rounded, slightly blunt in some specimens; space between basal impressions of pronotum not depressed; basal impressions very short, not reaching base (Fig. 4); apical blade
8′.	of aedeagus as in Fig. 17
9(7′).	Sides of pronotum straight toward base; space between basal impressions and hind angles convex (Figs. 6–8); color bronze
9'.	Sides of pronotum gently but evidently substitute (Figs. 9 and 10); color blackish brown without metallic reflections
10(9).	All striae of elytra entire and well developed; anterior impressed puncture of third interval adjoining third stria, the other two adjoining second stria
10'.	Striae in part faint; two anterior punctures of third interval adjoining second stria; pronotum as in Fig. 6; apical blade of aedeagus as in Fig. 19 minutus (Straneo)
11(10).	Pronotum more transverse (ratio length/width about 0.78); striae of elytra more deeply impressed; punctures of third interval moderate as usual; prono-
11'.	tum as in Fig. 7; apical blade of aedeagus as in Fig. 20 striolatus (Straneo) Pronotum more elongate (ratio length/width about 0.90, Fig. 8); striae of elytra in the posterior half very shallow; punctures of the third interval larger than usual, more or less foveate; apical blade of aedeagus as in Fig. 21 parvulus Straneo
12(9').	Prebasal subsinuosity of sides of pronotum very faint; pronotum less nar-

rowed towards base; hind angles not raised (Fig. 9); slightly larger (length 7.8 mm); apical blade of aedeagus narrower and more elongate (Fig. 22)

12'. Prebasal subsinuosity of sides of pronotum more evident; pronotum more narrowed towards base; basal angles distinctly raised so that basal impressions look wider and deeper (Fig. 10); slightly smaller (length 7 mm); apical blade of aedeagus less narrow and less elongate (Fig. 23)

..... angularis, new species

13(1'). Sides of pronotum strongly rounded nearly to base; basal angles very short (Fig. 11); apical blade of aedeagus as in Fig. 24 darlingtoni (Straneo)

13'. Sides of pronotum strongly sinuate before basal angles, which are not rounded (Fig. 12); apical blade of aedeagus as in Fig. 15 subcordatus (Straneo)

DESCRIPTIONS OF NEW SPECIES AND ADDITIONAL DATA ON CURRENTLY RECOGNIZED SPECIES Sierrobius (Sierrobius) kochalkai, new species

Specimens examined. -2.

Holotyne. - Carnegie Museum of Natural History, Holotype Number 798, male, labelled: Colombia, Sierra Nevada de Santa Marta, Rio Donachui, 13.200 ft (4023 m) (J. A. Kochalka 4.I.1973).

Paratype.—Coll. Straneo, male: same locality and data.

Description.—Length 10 mm; greatest width 3.3 mm. Head and pronotum dark brown, rather shiny, with lateral margin of pronotum reddish; elytra black with faint greenish reflection, not shiny, slightly sericeous; antennae and legs completely ferrugineous.

Head moderately elongate with two supraorbital setae; eves rather little convex; temples no longer than one-half length of eye; frontal impressions deep, very short, not reaching level of anterior supraorbital pore: front between impressions moderately convex, smooth.

Pronotum (Fig. 3) transverse; anterior margin nearly straight; sides rather rounded anteriorly, then little rounded to basal angles, which are rounded; lateral border very narrow, linear, with two usual setae, posterior one on basal angle; basal impressions deep, little divergent behind; space between impressions and basal angles moderately convex: base nearly straight, evidently depressed between impressions: disc little convex, median longitudinal line rather deep, reaching base, strongly deepened and subfoveate behind; pronotum with some small longitudinal impressed lines laterally and some undulating transverse lines on the disc at the sides of the median line.

Elytra subparallel-oval, with strong isodiametric microsculpture (meshes transverse, nearly 1.5 times longer than wide); basal border strong and entire, obtusely joined to lateral margin with sharp angle; shoulders rounded; sides moderately divergent behind shoulder, with greatest width at 1/3 length, thence nearly parallel for 1/3 length, then rounded to apex; preapical sinuosity well developed; striage deep, faintly

crenulate; scutellary stria well developed; basal pore very small, at the junction of scutellary and second stria; interstices very little convex, third one with 3 punctures, anterior puncture at ¼ length and joining third stria, second puncture at ⅓ length and nearly interrupting the interstice, last puncture about ⅓ of the distance from second puncture to apex; crossing of epipleurae well marked; umbilicate series not interrupted at middle and including about 16 pores.

Legs normal; posterior tarsi not grooved laterally; last tarsomere with some setae ventrally. Prosternum not grooved or impressed longitudinally; prosternal process strongly margined, chiefly laterally; proepisterna smooth, impunctate. Metepisterna trapezoidal, lateral border a little longer than anterior border, not margined, impunctate. Abdominal sterna with transversely punctate groove, as usual in *Sierrobius*; last sternum simple, with 1+1 (male) or 2+2 (female) setigerous punctures. Aedeagus with apical blade as in Fig. 16.

Etymology.—This species is dedicated to John A. Kochalka, collector of the interesting material which allowed me to make the present study.

Sierrobius (Sierrobius) davidsoni, new species

Specimens examined. -2.

Holotype.—Carnegie Museum of Natural History, Holotype Number 797, male, labelled: Colombia, Sierra Nevada de Santa Marta, Lake Arucuina, Rio Tucurinca 13,700 ft (J. A. Kochalka 12.III.1975).

Allotype. - Coll. Straneo, female: same locality and data.

Description.—Length 8.2 mm; greatest width 2.8 mm. Upper surface brown with faint metallic reflection; lateral border of pronotum reddish; underside, antennae, and legs ferrugineous brown.

Head rather elongate, with two usual supraorbital punctures; eyes not wide, very moderately convex; temples very short, inconspicuous; frontal impressions, deep, short, not reaching the level of anterior supraorbital seta; front between impressions smooth, convex.

Pronotum subrectangular (Fig. 5); anterior margin little excavated; anterior angles rounded, not prominent; sides very gently rounded in middle, more strongly so anteriorly and posteriorly, greatest width a little before middle; lateral border narrow, thin, with two usual setae, posterior one on the basal angle, which is rounded; basal impressions rather narrow, deep, elongate, reaching base; space between impressions and basal angle little convex, as is the disc; median line deep, shortened anteriorly and posteriorly; base straight, with a thin margined border from angles to basal impressions, a little depressed between them.

Elytra elongate, ovate, with strong isodiametric microsculpture (but shallower than in *kochalkai*); length 4.7 mm, greatest width 2.8 mm

near middle; basal border entire, joining lateral border nearly at right angle; shoulders a little angular; sides moderately rounded for whole length; preapical sinuosity and crossing of epipleurae rather strong; scutellary stria very short or effaced; striae in basal third well defined, though sometimes only by a series of superficial small punctures, thence nearly effaced; intervals completely flat, third one with three punctures, anterior puncture at $\frac{1}{5}$ length, second and third at $\frac{2}{3}$ and $\frac{4}{5}$ length, first and second ones adjoining third stria, third one adjoining second stria; umbilicate series composed of 8+1+6 pores.

Prosternum with moderately deep longitudinal impression in basal half; prosternal process flat with faint vestigial border visible only with oblique light; proepisterna smooth, impunctate. Metepisterna with lateral border a little longer than anterior border. Abdominal sterna with transverse punctate groove, as usual in *Sierrobius*; last sternum with 1+1 (male) and 2+2 (female) setigerous punctures. Aedeagus as in

Fig. 18.

The shape of the pronotum in this species is similar to that of kochalkai, but the sides are still less rounded, the disc is shiny and there are no undulating transverse lines. The depression between basal impressions is very faint. Two punctures of the third interval adjoin the third stria (instead of only the first one as in kochalkai).

Etymology.—This species is dedicated to Robert L. Davidson, who loaned me this interesting material.

Sierrobius (Sierrobius) aberrans, new species

Specimens examined. -2.

Holotype.—Carnegie Museum of Natural History, Holotype Number 799, male, labelled: Colombia, Sierra Nevada de Santa Marta, Lake N. of P. Norte Grande, Serra Donan Chucua 13,100 ft (J. A. Kochalka, 7.III.1975).

Allotype. — Coll. Straneo, female, labelled: Colombia, Sierra Nevada de Santa Marta, lake, Rio Donachui 14,400 ft (J. A. Kochalka, 8.I.1973).

Description.—Length 7.8–8.2 mm; greatest width 2.8–3.0 mm. Upper surface dark brown, shiny; elytra nearly as shiny as head and pronotum (due to very shallow microsculpture); underside, legs, and antennae ferrugineous brown, rather dark.

Head rather elongate, with two usual supraorbital setae on each side; eyes moderately convex; temples as convex as eyes, shorter than ½ length of eye; frontal impressions deep, nearly reaching level of first supraorbital seta; front between impressions convex.

Pronotum subtrapezoidal (Fig. 9), little convex, anteriorly very little emarginate; sides uniformly rounded for ²/₃ length, thence straight or

slightly subsinuate, converging to base; greatest width at $\frac{3}{5}$ length from base; anterior angles rather acute, a little prominent; basal angles nearly square, with apices not rounded and not raised; lateral border narrow, thin, surrounding basal angles and forming a short very narrow basal border; basal impressions rather deep, short, not reaching base; space between impressions and basal angles moderately convex, as is the disc; median line deep, narrow, reaching base, which is a little depressed between impressions.

Elytra oval, very moderately convex, nearly 1.55 times longer than wide; microsculpture isodiametric, very shallow and dense; base bordered; shoulders obtuse, not rounded; sides strongly rounded behind base, then less rounded, with greatest width at $\frac{3}{5}$ length; preapical sinuosity well developed; all striae well impressed, nearly smooth; scutellary stria variable, in the holotype well impressed on one elytron, less so on the other; basal pore at base of second stria indistinct; intervals little convex, even near apex; third interval with 3 punctures, anterior one at $\frac{1}{5}$ length and adjoining third stria, second and third punctures at $\frac{2}{3}$ and $\frac{4}{5}$ length; umbilicate series beginning rather far back from shoulders and consisting of 3+1+1+7 pores.

Legs normal; last tarsomere with several setae ventrally. Proepisterna smooth. Metepisterna a little longer than wide, strongly narrowed posteriorly, with a partial strong groove on medial side. Abdominal sterna with transverse punctate grooves less developed than is usual in *Sierrobius*; last sternum with 1+1 (male) or 2+2 (female) setigerous punctures. Apical blade of aedeagus narrow and rather elongate (Fig. 22).

The trapezoidal shape of the pronotum, the weakly convex pronotum and elytra, and the lack of any metallic reflection give to this species and to the following one an appearance rather different from usual *Sierrobius*. It is possible that they should be placed in a new subgenus.

Sierrobius (Sierrobius) angularis, new species

Specimens examined. -4.

Holotype.—Carnegie Museum of Natural History, Holotype Number 800, male, labelled: Colombia, Sierra Nevada de Santa Marta, Plateau pond on north branch of Quebrada Silvestre 13,950 ft (4251 m), 9.III.1975 (J. A. Kochalka).

Allotype. - Coll. Straneo, female: same locality and data.

Paratypes.—Carnegie Museum of Natural History and Coll. Straneo, two females, labelled: Colombia, Sierra Nevada de Santa Marta, lake, Rio Tucurinca 4785 m, 16.III.1975 (J. A. Kochalka).

Description.—Length 7 mm; greatest width 2.5 mm. Upper surface brown, without any metallic reflections; head and pronotum shiny,

elytra a little less so in male, dull sericeous in the female due to stronger microsculpture; underside, legs, and antennae ferrugineous brown.

Head moderately elongate, with two usual supraorbital setae on each side; eyes rather wide and convex; temples as long as ½ eye length; frontal impressions deep, rather wide, reaching the level of anterior supraorbital seta; front between impressions moderately convex, smooth.

Pronotum subtrapezoidal (Fig. 10), moderately convex; anteriorly little emarginate; anterior angles not prominent, rounded; sides strongly rounded for ½ length, thence straight or slightly subsinuate, converging to base; lateral border very narrow, linear, with two usual setigerous punctures, basal one a little inside and a little advanced from basal angle; basal angles nearly rectangular, raised, not blunt; basal impressions deep, wide, seemingly wider and deeper because of the raised basal angles; space between impressions and basal angles concave; base nearly straight, with faint vestigial border at sides; median line more or less deep, irregularly widened in some places, shortened anteriorly, not reaching base.

Elytra subparallel-oval, nearly 1.6 times longer than wide; microsculpture isodiametric, shallow and dense in the male, much stronger in the female; base bordered; shoulders moderately obtuse, a little angular; sides moderately rounded, greatest width nearly at middle; all striae deep; scutellary stria short, variable, sometimes faint; basal pore indistinct; intervals moderately convex, third interval with 3 punctures, anterior puncture at $\frac{1}{5}$ length and adjoining third stria, two others at $\frac{2}{3}$ and $\frac{4}{5}$ length and adjoining second stria; umbilicate series of 5+1+7 pores; preapical sinuosity well developed.

Prosternum with short longitudinal depression; prosternal process strongly depressed so that it appears to have a false border; proepisterna smooth. Metepisterna a little longer than wide, strongly narrowed posteriorly. Abdominal sterna with punctate groove interrupted at middle. Aedeagus as in Fig. 23.

Sierrobius (Sierrobius) parvulus Straneo, 1951

Specimens examined. -3.

Holotype. — Museum of Comparative Zoology, Harvard University, Type Number 28,429, female, labelled: Colombia, Northwestern Sierra Nevada de Santa Marta, 8–11,000 ft (Feb. 10–12, 1929, Darlington).

Additional material examined.—Colombia, Sierra Nevada de Santa Marta, Cuch. Cebolleta, 3505 m (J. A. Kochalka, 9 May 1975). 2 specimens (Carnegie Museum of Natural History, Coll. Straneo).

Remarks. - This species was described from a single female. As one

of the Kochalka specimens is a male, I have included a sketch of the apical blade of the aedeagus (Fig. 21).

Sierrobius (Sierrobius) laevis (Straneo, 1951), new combination

Holotype.—Museum of Comparative Zoology, Type Number 28,431, male, labelled: Colombia, N.W. Sierra N. de Sta Marta, 11–12,000 ft (Darlington, 10–12.II.1929).

Additional material examined.—Colombia, Sierra Nevada de Santa Marta, Cuch. Cebolleta, 3505 m. (J. A. Kochalka, 9 May 1975). 2 specimens (Carnegie Museum of Natural History, Coll. Straneo).

Sierrobius (Sierrobius) bistriatus Straneo, 1951

Holotype. – Museum of Comparative Zoology, Type Number 28,428, male, labelled: Colombia, N.W. Sierra N. de Sta Marta, 8–11,000 ft (Darlington, 10–11.II.1929).

Additional material examined.—Colombia, Sierra Nevada de Santa Marta, Casa Antonio, Loma Cebolleta, 2700 m (J. A. Kochalka, 8 May 1975). 2 specimens (Carnegie Museum of Natural History, Coll. Straneo).

Sierrobius (Pachyabaris) darlingtoni (Straneo, 1951), new combination

Holotype.—Museum of Comparative Zoology, Type Number 28,433, male, labelled: N.W. Sierra N. de Sta Marta, 12,000 ft (Darlington, 11.II.29).

Allotype. - Coll. Straneo, female, same locality and data.

Paratype. — Museum of Comparative Zoology, female, same locality and data.

Additional material examined.—Colombia, Sierra Nevada de Santa Marta, S. of lake branch Que. el Chorro, 3797 m (J. A. Kochalka, 5 February 1975). 3 specimens (Carnegie Museum of Natural History, 2, Coll. Straneo).

Sierrobius (Pachyabaris) subcordatus (Straneo, 1951), new combination

Specimens examined.—5.

Holotype.—Museum of Comparative Zoology, Type Number 28,435, female, labelled: Colombia, Sierra Nevada de Santa Marta, 12,000 ft, Feb. 11, 1929 (Darlington).

Additional material examined.—Colombia, Sierra Nevada de Santa Marta, 3797 m, S. of lake branch Que. el Chorro (J. A. Kochalka, 5 March 1975). Lake N. of P. Norte Grande, Serr. Donan Chucua, 13,100 ft (J. A. Kochalka, 7 March 1975). 4 specimens (Carnegie Museum of Natural History, 2, Coll. Straneo, 2).

Remarks.—This species too was described from an unique female specimen. In Fig. 25, I give a sketch of the apical blade and left lateral aspect of the aedeagus.

RESUME

Le genre Sierrobius Straneo 1951 et son sousgenre Pachyabaris Straneo 1951 se rencontrent exclusivement sur la Sierra Nevada de Santa Marta, Colombia. Trois des espèces attribuées dans la description originale à Pachyabaris sont mieux placées dans Sierrobius (Sierrobius) (laevis Straneo, 1951, minuta Straneo, 1951, striolata Straneo, 1951). Quatre Sierrobius nouveaux (kochalkai, davidsoni, aberrans, angularis) sont décrits ici. Les deux dernières espèces (aberrans, angularis) ont un faciès particulier et devront probablement être placées dans un sousgenre nouveau.

ACKNOWLEDGMENTS

I am very grateful to Robert L. Davidson for the communication of this very interesting material and for the duplicates generously presented to my collection. I would like to thank the authorities of the Museum of Comparative Zoology for the loan of all the unique types of this genus.

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